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# HOW TO ATTRACT BIRDS IN *the* MIDDLE ATLANTIC STATES

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**B**IRDS appeal strongly to the interests and affections of mankind. Not only do they charm by their graceful forms, harmonious colors, sprightly actions, and usually pleasing notes, but they have an even more important claim upon our esteem because of their great economic value.

Birds feed upon practically all insect pests. They are voracious, able to move freely from place to place, and exert a steady influence in keeping down the swelling tide of insect life.

For economic as well as for esthetic reasons, therefore, an effort should be made to attract and protect birds and to increase their numbers. Where proper measures of this kind have been taken an increase of several fold in the bird population has resulted, with decreased losses from depredations of injurious insects.

This bulletin is one of a series intended to describe the best methods of attracting birds in various parts of the United States, especially by providing a food supply and other accessories about the homestead. The area to which it is adapted is shown by the map on page 3.

# HOW TO ATTRACT BIRDS IN THE MIDDLE ATLANTIC STATES.

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THE MEANS of increasing the number of birds about the home are few and simple. They comprise adequate protection and the provision of suitable nesting places, food, and water. It is planned in a series of publications, of which this bulletin relating to the Middle Atlantic States (fig. 1) is the third,<sup>1</sup> to recommend practicable methods of attracting birds about homes in the various parts of the United States. Especial attention will be given to the value of fruit-bearing shrubs and trees, as less information relating to these as a means of attracting birds is available than concerning more widely known but not more important measures, as protection, winter feeding, and the supplying of nesting boxes and water. Furthermore, the last-named measures need not vary so much with the locality as does choice of fruit-bearing shrubs and trees.

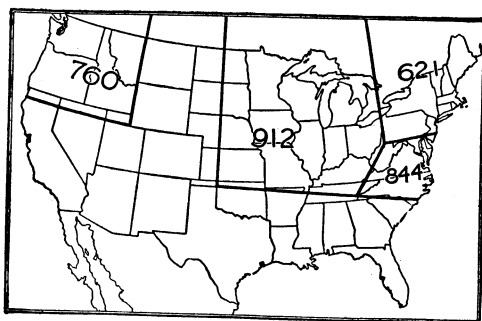


FIG. 1.—Map of the United States, the area containing the number of this bulletin, 844, showing the territory to which this publication applies. Similar bulletins have been prepared for other sections, as indicated by the numbers.

## PROTECTION.

Protection is the prime requisite for increasing the number of birds in any area, and the results of protection are in direct proportion to its thoroughness. Besides being insured against every form of persecution by human kind, birds must be defended from various natural foes. The most effectual single step is to surround the proposed bird sanctuary with a vermin-proof fence (fig. 2). Such a fence should prevent entrance either by digging or by climbing, but

<sup>1</sup> Other bulletins in the series are Farmers' Bulletins 621, relating to the Northeastern States; 760, to the Northwestern States; 912, to the East Central States; and (for general distribution) 609, on Bird Houses, and 1239, on Community Bird Refuges.

will serve its greatest use if it can not be climbed, and is therefore cat proof. For this purpose the erect part of the fence above ground should be 6 feet high, and the weave should not be more than  $1\frac{1}{2}$ -inch mesh. The overhang should be 2 feet wide, and if strung with wires these should be not more than  $1\frac{1}{2}$  inches apart. If it is impracticable to build an impenetrable fence, the next best device is to put guards (fig. 3) of sheet metal on all nesting trees and on poles supporting bird houses. This should be done in any case where squirrels or snakes are likely to intrude, as it is usually impossible to fence out these animals. Tree guards should be 6 feet or more above ground. Attacks by hawks, owls, crows, jays, or other enemies are best controlled by eliminating the destructive individuals. Those who wish to combat English sparrows will find full directions for so doing in Farmers' Bulletin 493.<sup>1</sup>

### BREEDING PLACES.

Although a considerable number of our native birds build their nests on the ground, the majority place them in trees or shrubs, either in holes or on the limbs or in the crotches. Shrubbery and trees for nesting sites, therefore, are essential for making a place attractive to birds, and a double purpose is served if the kinds planted are chosen from the list of fruit-bearing species given farther on. Shrubs should be allowed to form thickets and should be pruned back severely when young so as to produce numerous crotches.

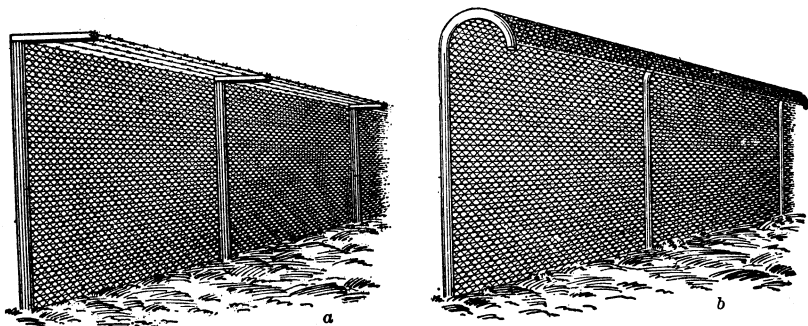


FIG. 2.—Cat-proof fences: a, With barbed wire; b, with loose overhanging netting.

Constant removal of old trees and modern tree-surgery have resulted in a great diminution in the number of tree cavities, the natural homes of most of our hole-nesting birds. Fortunately, most of these birds will utilize artificial nest cavities, or bird houses. The sizes useful for various birds, plans for making, and illustrations of numerous bird boxes are given in Farmers' Bulletin 609.<sup>2</sup> Styles of bird houses may be almost endlessly varied. These structures may be improvised by anyone, but they may be purchased also from

<sup>1</sup> Dearborn, Ned, "The English Sparrow as a Pest," revised, 1917.

<sup>2</sup> Dearborn, Ned, "Bird Houses and How to Build Them," revised, 1917.

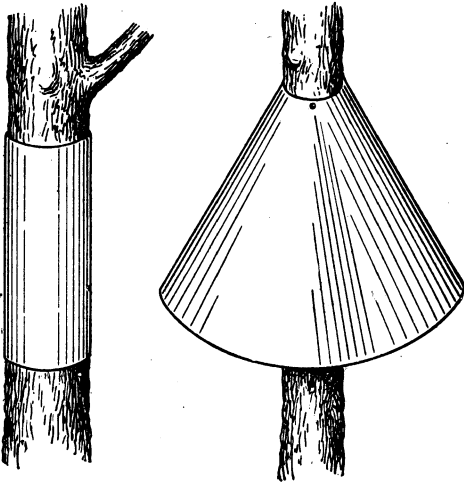


FIG. 3.—Tree guards.

numerous dealers. The most common errors in putting out bird houses are choosing poor locations and supplying too many boxes. A bird house needs only partial shade, and houses on poles usually are taken. Martins prefer a house standing apart from trees. Entrances to boxes should be sheltered by projecting roofs and should face away from the prevailing wind and rain storms. All bird houses should be constructed so that the interior may easily be examined and cleaned.

As a rule, birds do not like being crowded, and if a place is studded with bird houses only a few of them will be occupied. Birds not only do not want bird neighbors too near, but are impatient of human meddling, and therefore should be granted as much privacy as possible during the actual incubating and brooding. Nests built in shrubbery are especially likely to come to a bad end if the birds are frequently disturbed.

If ground-nesting birds, as bobolinks, meadowlarks, and bobwhites, are to be protected, grass in the nesting fields must not be cut during the breeding season.

#### WATER SUPPLY.

Nothing has a more potent attraction for birds during hot weather than drinking and bathing places. The birds' water supply should be a pool not more than a few inches deep, the bottom sloping gradually upward toward the edge. Both bottom and edge should be rough, so as to afford a safe footing. A giant pottery saucer (fig. 4, *a*) is an excellent device, or the pool may be made of concrete or even metal, if the surface be roughened (fig. 4, *b*). The bird bath may be elevated, or on the ground if in an open space where skulking enemies can not approach too near.

A water supply is appreciated in winter as well as in summer. If running water can not be provided, that supplied should be warmed to delay freezing.

#### FOOD SUPPLY.

Food supply is the vital factor in bird life and the most important single offering that can be made in efforts to attract birds. It is important to note that an ample supply of food prior to and during the

nesting season tends to increase the number of eggs laid and also the number of broods in a season. Bird food may be supplied in two ways—by planting trees, shrubs, and herbs which produce seeds or fruits relished by birds, and by exposing food in artificial devices. The most familiar phase of the latter method is winter feeding.

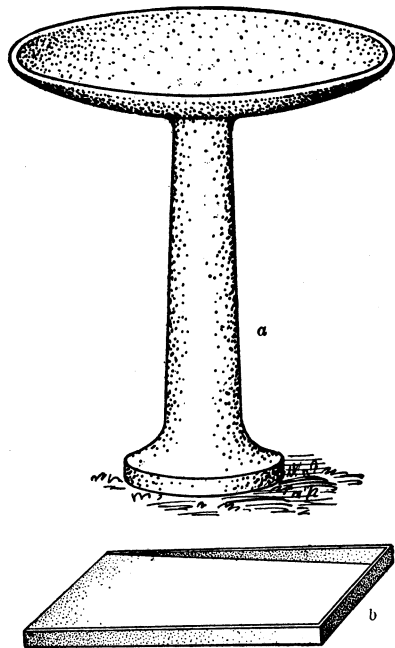


FIG. 4.—Bird baths: *a*, Pottery; *b*, metal or concrete.

#### ARTIFICIAL FOOD.

During the season when the natural food supply is at its lowest ebb, birds respond most readily to our hospitality. Winter feeding has become very popular, and the result has been to bring about better understanding between birds and human kind.

The winter foods commonly used include suet or other fat, pork rinds, bones with shreds of meat, cooked meats, meal worms, cut-up apples, birdseed, buckwheat, crackers, crumbs, coconut meat, cracked corn, broken dog biscuits or other bread, hemp seed, millet, nut meats of all kinds (especially peanuts), whole or rolled oats,

peppers, popcorn, pumpkin or squash seeds, raw or boiled rice, sunflower seeds, and wheat.

The methods of making these supplies available to birds are as varied as the dietary itself. A device very commonly used is the food tray or shelf (figs. 5 and 6). This may be put on a tree or pole, by a window or at some other point about a building, or strung upon a wire or other support on which it may be run back and forth. The last device is useful in accustoming birds to feed nearer and nearer a comfortable observation point. A fault with food shelves is that wind and rain may sweep them clean and snow may cover the food. These defects may be obviated in part by adding a raised ledge about the margin or by placing the shelf in the shelter of a wall or shielding it with evergreen branches on one or more sides.

Feeding devices not affected by the weather are preferable. An excellent one is a coconut with a hole made in one end (fig. 7). The cavity is filled with chopped suet and nuts or other food mixture, and the nut is suspended by a wire from a limb. The size of the hole regulates the character of the guests; if small, large birds can

not gobble the supply. The coconut meat as well as the stuffing is eaten. Cans with small openings may be substituted for coconuts. Food baskets of any desired size made of wire netting or a metal grating may be hung up or fastened to the trunk of a tree. Food mixtures in melted fat may be poured into holes made in a branch or stick (fig. 8) or in cracks of bark or over evergreen branches. All of these devices minimize or counteract the disturbing effects of stormy weather.

More elaborate apparatus for the same purpose comprises various forms of food hoppers (figs. 6 and 9) and food houses. The food hoppers in common use for domestic fowls are adapted to the feeding of birds, and some special forms are now manufactured for wild birds.

The food house is a permanent structure, with solid roof, and glass on one or more sides to permit observations (fig. 10). The food

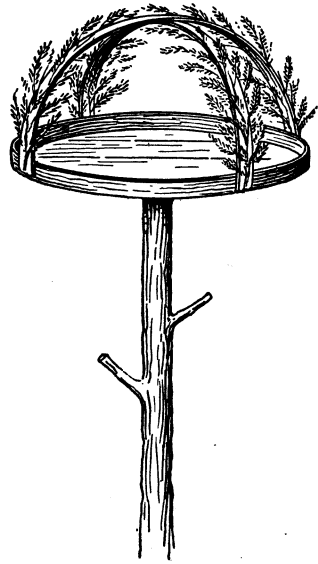


FIG. 5.—Food tray.

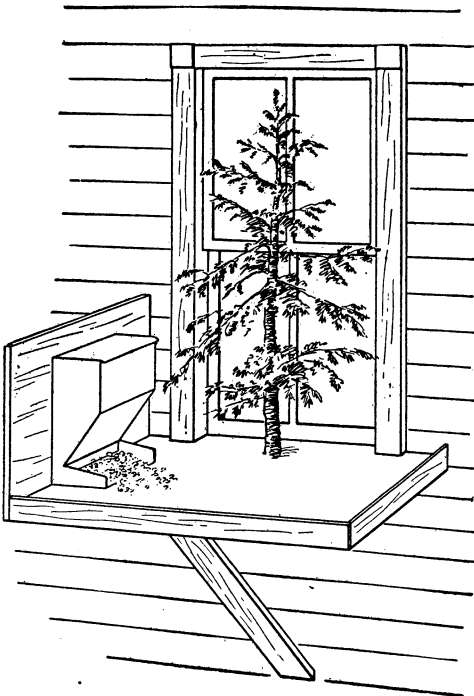


FIG. 6.—Food shelf.

trays it contains are entirely sheltered from the weather. In one style this result is obtained by mounting the house on a pivot and furnishing it with vanes (fig. 11) which, if large enough, keep the open side always away from the wind.

Game birds and sparrows may be provided with feeding places by erecting low hutches or making wigwam-like shocks of corn or grain sheaves under which food may be scattered. The opening should be to the south.

Those who desire to have birds about their homes should not feel that their power to attract them is gone when winter is over. Winter feeding easily passes into summer feeding, and

experience proves that some birds gladly avail themselves through-out the year of this easy mode of getting a living.

#### NATURAL FOOD.

We have thus far considered ways of feeding birds tidbits we ourselves have gleaned. We may feed them by another method, by cultivating their natural food plants and allowing them to reap the harvest in their own way.

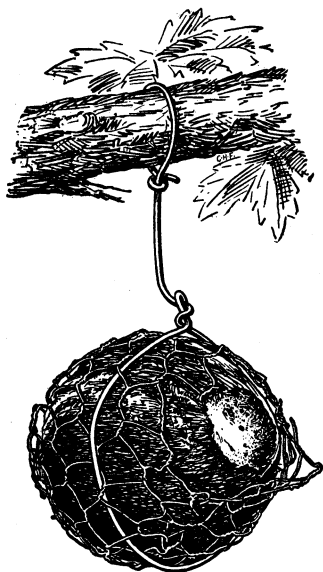


FIG. 7.—Coconut larder.

Less has been done in this respect for the true seed-eating birds than for those fond of pulpy fruits. The reason is obvious, however. Our seed-eating birds largely patronize weeds, which we do not wish to cultivate, while the fruit eaters depend upon many plants which we hold in such esteem for their ornamental value that they are generally cultivated.

#### FEEDING SEED-EATING BIRDS.

Something can be done, however, to attract the seed eaters about our homes. A number of commonly cultivated annual plants, belonging to the same groups as those upon which the birds feed extensively in nature, produce good crops

of seeds. These plants, being dependent upon cultivation, can be used without fear that they will become pests. The following are suggested for the purpose: Prince's feather,<sup>1</sup> love lies bleeding,<sup>2</sup> asters, calandrinias, blessed thistle,<sup>3</sup> centaureas, California poppies,<sup>4</sup> sunflowers, tarweed,<sup>5</sup> forget-me-nots, *Polygonum orientale* and *P. sachalinense*, *Portulaca*, *Silene*, and "sugar cane" (sorghum varieties).

The various millets are relished by nearly all seed-eating birds. Common millet,<sup>6</sup> Japanese millet or barnyard grass,<sup>7</sup> and German millet or Hungarian grass<sup>8</sup> may be obtained from most seedsmen, and should be planted in abundance by those wishing to attract granivorous birds. The height and stiffness of stalk of varieties of sorghum should make these abundant seeders valuable in winter. Japanese

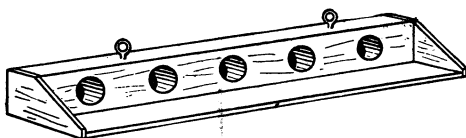


FIG. 8.—Feeding stick.

<sup>1</sup> *Amaranthus cruentus*.

<sup>2</sup> *A. caudatus*.

<sup>3</sup> *Carduus benedictus*.

<sup>4</sup> *Eschscholtzia*.

<sup>5</sup> *Madia elegans*.

<sup>6</sup> *Panicum miliaceum*.

<sup>7</sup> *Echinochloa crus-galli*.

<sup>8</sup> *Chetochloa italica*.

millet holds its seeds well, and, if planted thickly where it can grow up through a horizontal lattice work, makes a valuable cover and feeding place for winter birds. Canary grass<sup>1</sup> and various species of *Pennisetum* also are good for seed-eating birds.

Alders and birches bear in their numerous cones a supply of seeds which are eagerly sought for by red-polls, siskins, and gold-finches during the winter. Still another group of birds may be catered to by planting ashes and box elders. The winged fruits of these trees are opened and the seeds eaten by pine and evening grosbeaks, the visits of these birds being largely regulated by the supply of this kind of food.

Larches, pines, and other conifers are attractive to crossbills as well as to some of the species just mentioned.

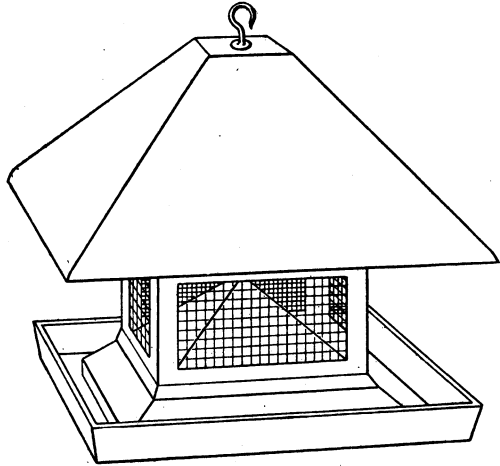


FIG. 9.—Food hopper (roof detachable)

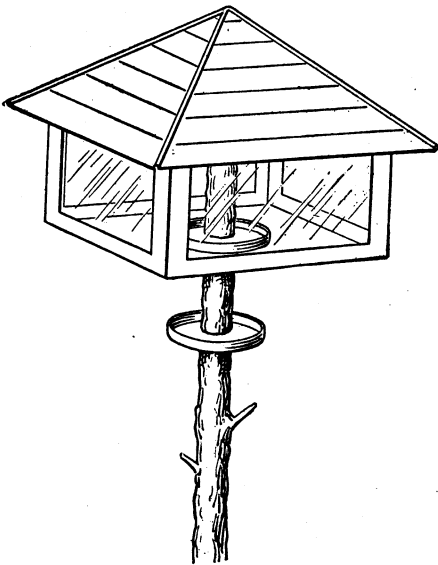


FIG. 10.—Food house.

#### FEEDING FRUIT-EATING BIRDS.

Feeding fruit-eating birds is best accomplished by planting selected species of fruit-bearing shrubs and trees. Through late spring and summer there is usually an abundance of insect food, in addition to fruit enough for all the birds. So far as fruit alone is concerned, fall is the season of overflowing abundance; in winter the supply gradually decreases, and late winter and early spring are the seasons of actual scarcity. This is the critical time of year for many birds, and a plentiful supply of wild fruit will tide them over. Fortunately, every-

where in the United States there are some fruits that persist until there is no longer any need of them. If enough are planted, no birds

<sup>1</sup> *Phalaris canariensis*.

able to live on this class of food should starve. The best of these long persisting fruits are juniper, bayberry, thorn apples and related fruits, holly, and snowberry.

Table 1 shows the relative popularity with birds of important genera of fleshy fruits. From these genera and a few others have been selected the species adapted to the Middle Atlantic States, that make up Table 2. Various considerations have influenced choice, as ornamental value, earliness, lateness, or length of fruiting season, and especially availability of the plants through ordinary channels of trade. The data on fruiting seasons have been compiled from the principal herbaria of the Middle Atlantic States, with a few additions from other sources.

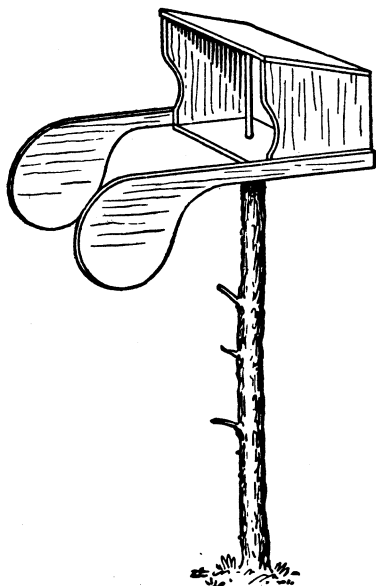


FIG. 11.—Food house on pivot.

The fruiting seasons indicated include the earliest and latest dates recorded for the Middle Atlantic States. Hence it can not be expected that fruit will be available in any one locality throughout the entire bearing season of a plant unless a large number of plants are

set out and in a variety of situations. Purchasers may obtain information from nursery catalogues as to where, when, and how to plant. Notes on species which may be substituted for some of those in the main list, and other comments, are given for Table 2.

TABLE 1.—Preference of birds among genera of fleshy fruits.<sup>1</sup>

Common name.	Scientific name.	Number of species of birds known to eat the fruit. <sup>2</sup>	Kinds of birds among those desirable to attract, that are most fond of the fruit. <sup>3</sup>
Juniper; red cedar....	Juniperus.....	39	Yellow-shafted flicker, starling, evening grosbeak, pine grosbeak, purple finch, cedar waxwing, myrtle warbler, mockingbird, robin, eastern bluebird.
Greenbrier.....	Smilax.....	39	Cardinal, mockingbird, brown thrasher, catbird, hermit thrush, robin.
Bayberry.....	Myrica.....	73	Bob-white, downy woodpecker, yellow-shafted flicker, eastern phoebe, starling, meadowlark, chewink, tree swallow, white-eyed vireo, myrtle warbler, brown thrasher, catbird, Carolina wren, black-capped chickadee, hermit thrush, eastern bluebird.
Hackberry.....	Celtis.....	40	Yellow-bellied sapsucker, yellow-shafted flicker, starling, cardinal, cedar waxwing, mockingbird, brown thrasher, robin, eastern bluebird.

<sup>1</sup> Barberries (*Berberis*) and currants (*Ribes*) are omitted because they serve as alternate hosts of rusts attacking wheat and white pine, respectively.

<sup>2</sup> When 10 or more.

<sup>3</sup> Included on the basis of field observation or because fruit was found in 10 or more stomachs.

TABLE 1.—*Preference of birds among genera of fleshy fruits—Continued.*

Common name.	Scientific name.	Number of species of birds known to eat the fruit.	Kinds of birds among those desirable to attract, that are most fond of the fruit.
Mulberry.....	Morus.....	52	Yellow-billed cuckoo, red-headed woodpecker, red-bellied woodpecker, downy woodpecker, kingbird, starling, Baltimore oriole, orchard oriole, cardinal, purple finch, scarlet tanager, cedar waxwing, red-eyed vireo, yellow warbler, mockingbird, catbird, wood thrush, robin.
Pokeberry.....	Phytolacca.....	49	Mourning dove, yellow-shafted flicker, kingbird, starling, cardinal, mockingbird, catbird, hermit thrush, gray-cheeked thrush, olive-backed thrush, robin, eastern bluebird.
Spicebush.....	Benzoin.....	17	Kingbird, red-eyed vireo, wood thrush, veery.
Sassafras.....	Sassafras.....	18	Bob-white, kingbird, red-eyed vireo, catbird, veery, robin.
Strawberry.....	Fragaria.....	46	Chewink, catbird, brown thrasher, wood thrush, robin.
Raspberry; blackberry.	Rubus.....	118	Ruffed grouse, bob-white, red-headed woodpecker, yellow-shafted flicker, kingbird, starling, Baltimore oriole, orchard oriole, pine grosbeak, song sparrow, fox sparrow, white-throated sparrow, chewink, California towhee, spurred towhee, cardinal, rose-breasted grosbeak, black-headed grosbeak, cedar waxwing, red-eyed vireo, mockingbird, catbird, brown thrasher, tufted titmouse, wren-tit, olive-backed thrush, wood thrush, robin, eastern bluebird.
Rose.....	Rosa.....	25	Ruffed grouse, sharp-tailed grouse, prairie chicken, bob-white.
Mountain ash.....	Sorbus.....	14	Red-headed woodpecker, Baltimore oriole, evening grosbeak, pine grosbeak, cedar waxwing, Bohemian waxwing, catbird, brown thrasher, robin.
Chokeberry.....	Aronia.....	13	Meadowlark, brown thrasher.
Red haw.....	Crataegus.....	33	Ruffed grouse, pine grosbeak, purple finch, robin.
Dwarf apples.....	Malus.....	( <sup>1</sup> )	Ruffed grouse, ringneck pheasant, red crossbill, pine grosbeak, purple finch, cedar waxwing, mockingbird, robin.
Juneberry.....	Amelanchier.....	40	Yellow-shafted flicker, Baltimore oriole, cedar waxwing, catbird, hermit thrush, veery, robin.
Wild cherry.....	Prunus.....	74	Ruffed grouse, bob-white, mourning dove, red-headed woodpecker, yellow-shafted flicker, kingbird, starling, Bullock oriole, Baltimore oriole, orchard oriole, evening grosbeak, purple finch, rose-breasted grosbeak, black-headed grosbeak, Louisiana tanager, red-eyed vireo, cedar waxwing, mockingbird, catbird, brown thrasher, olive-backed thrush, wood thrush, robin, eastern bluebird.
Sumac <sup>2</sup> .....	Rhus <sup>2</sup> .....	93	Ruffed grouse, bob-white, valley quail, downy woodpecker, red-bellied woodpecker, red-shafted flicker, yellow-shafted flicker, phoebe, starling, goldfinch, golden-crowned sparrow, chewink, white-eyed vireo, Audubon warbler, mockingbird, catbird, California thrasher, brown thrasher, Carolina wren, black-capped chickadee, Carolina chickadee, wren-tit, hermit thrush, robin, eastern bluebird.
Pepperberry.....	Schinus.....	11	Cedar waxwing, phainopepla, hermit thrush, varied thrush, robin.
Holly.....	Ilex.....	45	Ruffed grouse, bob-white, valley quail, yellow-bellied sapsucker, yellow-shafted flicker, cedar waxwing, mockingbird, catbird, brown thrasher, hermit thrush, robin, eastern bluebird.
Supple-jack.....	Berchemia.....	13	Mockingbird, robin.
Buckthorn.....	Rhamnus.....	16	Mockingbird, catbird, brown thrasher, robin.
Wild grape.....	Vitis.....	77	Ruffed grouse, bob-white, pileated woodpecker, red-bellied woodpecker, red-shafted flicker, yellow-shafted flicker, kingbird, starling, cardinal, cedar waxwing, mockingbird, catbird, brown thrasher, wood thrush, veery, robin, western bluebird, eastern bluebird.
Virginia creeper.....	Parthenocissus..	39	Red-headed woodpecker, red-bellied woodpecker, yellow-bellied sapsucker, yellow-shafted flicker, starling, evening grosbeak, purple finch, scarlet tanager, red-eyed vireo, mockingbird, brown thrasher, tufted titmouse, hermit thrush, olive-backed thrush, gray-cheeked thrush, robin, eastern bluebird.

<sup>1</sup> Thirty-eight kinds of birds are known to feed on apples of various sorts, but it is not known just how many seek the small-fruited flowering apples, which are the best to plant for birds.

<sup>2</sup> Only nonpoisonous species of sumac are considered.

TABLE 1.—*Preference of birds among genera of fleshy fruits—Continued.*

Common name.	Scientific name.	Number of species of birds known to eat the fruit.	Kinds of birds among those desirable to attract, that are most fond of the fruit.
Buffaloberry.....	Shepherdia.....	16	Sharp-tailed grouse, pine grosbeak.
Silverberry, Russian olive, etc.	Elæagnus.....	( <sup>1</sup> )	Sharp-tailed grouse, prairie chicken, cedar waxwing, catbird, robin.
Wild sarsaparilla.....	Aralia.....	14	Bob-white, robin.
Dogwood.....	Cornus.....	86	Ruffed grouse, bob-white, downy woodpecker, yellow-shafted flicker, red-shafted flicker, kingbird, starling, evening grosbeak, pine grosbeak, purple finch, white-throated sparrow, song sparrow, cardinal, cedar waxwing, warbling vireo, red-eyed vireo, catbird, brown thrasher, hermit thrush, olive-backed thrush, gray-cheeked thrush, wood thrush, robin, eastern bluebird.
Sour gum.....	Nyssa.....	36	Yellow-shafted flicker, starling, purple finch, cedar waxwing, gray-cheeked thrush, olive-backed thrush, robin.
Crowberry.....	Empetrum.....	16	Pine grosbeak, snowflake.
Bearberry.....	Arctostaphylos..	16	Ruffed grouse, dusky grouse, valley quail, mountain quail, fox sparrow, wren-tit.
Huckleberry.....	Gaylussacia.....	35	Pine grosbeak, chewink, robin.
Blueberry.....	Vaccinium.....	67	Ruffed grouse, valley quail, kingbird, orchard oriole, pine grosbeak, chewink, cedar waxwing, catbird, brown thrasher, black-capped chickadee, tufted titmouse, hermit thrush, robin, eastern bluebird.
Mexican mulberry.....	Callicarpa.....	10	Mockingbird, brown thrasher.
Partridge berry.....	Mitchella.....	10	Ruffed grouse.
Elderberry.....	Sambucus.....	106	Valley quail, red-headed woodpecker, yellow-shafted flicker, eastern kingbird, Arkansas kingbird, black phoebe, starling, California towhee, white-crowned sparrow, rose-breasted grosbeak, black-headed grosbeak, phainopepla, red-eyed vireo, mockingbird, catbird, brown thrasher, California thrasher, wren-tit, olive-backed thrush, robin, western bluebird, eastern bluebird.
Snowberry.....	Symphoricarpos.	25	Sharp-tailed grouse, evening grosbeak, pine grosbeak, varied thrush.
Black haw.....	Viburnum.....	28	Ruffed grouse, yellow-billed cuckoo, yellow-shafted flicker, starling, purple finch, rose-breasted grosbeak, cedar waxwing, catbird, brown thrasher, robin, eastern bluebird.
Honeysuckle.....	Lonicera.....	15	Bob-white, pine grosbeak, white-throated sparrow, catbird, brown thrasher, hermit thrush, robin.

<sup>1</sup> Data given are based entirely on field observations; total number of birds eating the various species of *Elæagnus* unknown.

## NOTES ON TABLE 2.

Yew. *Taxus canadensis*, fruiting from middle of July to end of September, is native to the higher parts and may be grown in cultivation almost anywhere in the region.

Juniper (*Juniperus communis*). The same remark applies, except that the bearing season includes the whole year.

Bayberry. *Myrica cerifera* may be substituted.

Mulberry. Early bearing varieties should be selected. The Townsend, a very early variety in the South, has been found not hardy at Washington.

Pokeweed. Let it grow through shrubs or a trellis which will support it in winter.

Barberry. *B. thunbergii*, according to recent evidence, seems not so poor a bird food as was formerly thought; at the end of its season, when softened by frosts, it seems palatable to purple grackles, English sparrows, and cedar birds. It is said also to be eaten by quail. It bears ripe fruit from October to April.

Sassafras. Appears in most catalogues as *S. officinale* or *S. sassafras*.

Wild strawberry. Little dealt in, must usually be transplanted from native growths.

Rose. All native species have long persistent fruit. The small-fruited ones are best for birds. *R. carolina* is suited to low grounds and *R. humilis* and *R. setigera* to drier places. *R. micrantha* and *R. multiflora* are among the best introduced roses.





**Japanese wineberry.** The fruit of this species in dry condition sometimes hangs until the end of May. Besides the species of *Rubus* mentioned in the table, almost any of the native species furnish good bird food. The dewberries are especially prolific.

**June berry.** *Amelanchier canadensis*, sold by nurserymen, is a composite species. Several species are now recognized, among which *A. laevis* is a notably early fruiter and *A. sanguinea* a late one. Some fruit of June berries occasionally hangs much later than the season indicated but in very dry condition.

**Chokeberry.** Sometimes called *Pyrus* or *Aronia nigra*. *A. arbutifolia*, another native species, retains its fruit just as long, but the fruit becomes very dry toward the end of the season.

**Cherry.** *Prunus padus* is a good early-fruiting kind.

**Sumac.** *Rhus hirta* (*typhina*) may be substituted.

**Mountain holly.** Sometimes a few fruits hang much later. In all hollies sexes tend to be on separate plants; both required.

**Leatherwood.** Allied plants, having longer fruiting seasons, may well be tried in the Middle Atlantic States. They include wild pepper (*Daphne mezereum*) and sea buckthorn (*Hippophaë rhamnoides*). The oleasters (*Elæagnus angustifolia*, *E. hortensis*, and *E. umbellata*) also are worthy of trial.

**Dogwoods.** *Cornus alba* and *C. mas* are especially early-fruiting species.

**Huckleberry.** *Gaylussacia baccata* is often sold as *G. resinosa*.

**Blueberry.** Any native species may be substituted.

**Persimmon.** Sexes on different plants; both required to produce fruit.

**Privet.** *Ligustrum ibota* and *L. media* are equally good. Must not be clipped, as berries are borne on outer twigs.

**Honeysuckle.** *Lonicera japonica* also holds its berries late, but it easily becomes a weed.

**Coralberry.** The snowberry (*S. racemosus*), which hangs late and is even a better bird food, can be cultivated.

**Viburnum.** *V. cassinoides* for wet situations and *V. pubescens* for dry may be added.

### PLANTS FOR THE SHORE.

The seashore of the Middle Atlantic States is practically all sandy. Where the soil is chiefly sand, and that often shifting, conditions are not suited to many plants. Selection may be made, however, from the following, all of which are known to thrive in such surroundings:

*For seed eaters.*—Beach grass,<sup>1</sup> *Polygonum sachalinense*, and sunflower.

*For fruit eaters.*—Bayberry or wax myrtle,<sup>2</sup> sea buckthorn,<sup>3</sup> sand cherry,<sup>4</sup> beach plum,<sup>5</sup> cranberries, and bearberry.<sup>6</sup>

### PROTECTING CULTIVATED FRUITS.

Birds devour cultivated fruit principally because the processes of cultivation diminish the wild supply. The presence of wild fruit in a locality always serves to protect domestic varieties, especially when the wild trees or shrubs are of the same kinds as the cultivated ones and ripen earlier. Among those most useful for the purpose are mulberry, wild blackberries and strawberries, June berry, wild cherry, and elderberry.

Table 3 shows in a graphic way species which may be used to protect the principal classes of cultivated fruits.

<sup>1</sup> *Ammophila arenaria* and *Calamovilfa longifolia*.

<sup>2</sup> *Myrica cerifera*.

<sup>3</sup> *Hippophaë rhamnoides*.

<sup>4</sup> *Prunus pumila* or *P. cuneata*.

<sup>5</sup> *Prunus maritima*.

<sup>6</sup> *Arctostaphylos uva-ursi*.

TABLE 3.—Seasons of fruits useful to protect cultivated varieties.

Common name.	Scientific name.	Native or introduced.	To protect—	Fruiting season.					
				Apr.	May.	June.	July.	Aug.	Sept. Oct.
Wild strawberry	<i>Fragaria virginiana</i>	Native	Strawberries		██████████				
Wild raspberry	<i>Rubus occidentalis</i>	do	Raspberries and blackberries		██████████	██████████	██████████	██████████	
Dew berry	<i>Rubus villosus</i>	do	do		██████████	██████████	██████████	██████████	
Japanese wineberry	<i>Rubus phenicolasius</i>	Introduced	do						
White mulberry	<i>Morus alba</i>	do	Cherries		██████████	██████████	██████████	██████████	
Red mulberry	<i>Morus rubra</i>	Native	do		██████████	██████████	██████████	██████████	
Red berry	<i>A. melanchier canadensis</i>	do	do		██████████	██████████	██████████	██████████	
Wild cherry	<i>Prunus pennsylvanica</i>	do	do		██████████	██████████	██████████	██████████	
Stock cherry	<i>Prunus mahaleb</i>	Introduced	do			██████████	██████████	██████████	
Red-berried elder	<i>Sambucus racemosa</i>	Native	do						
Flowering crabapple	<i>Pyrus floribunda</i>	Introduced	Apples and pears			██████████	██████████	██████████	██████████
Cocks spur thorn	<i>Crataegus crus-galli</i>	Native	do			██████████	██████████	██████████	██████████
Washington thorn	<i>Crataegus phanopyrum</i>	do	do						